SOIL conservation

U. S. Department of Agriculture / Soil Conservation Service / June 1975

From the Administrator

The Eyes Have It

Over four decades the Soil Conservation Service has significantly added to the beauty of the landscape:

—Green woodlands cover once scarred red hillsides;

—Native grasses, windbreaks and shelterbelts have replaced a barren, shifting dust bowl;

—Colorful contour strips add variety to the landscape;

—Farm ponds and watershed lakes give new mirrored highlights to the rural scene.

The eyecatching appeal of most conservation work used to be mainly an unexpected side benefit. Our eye was focused mainly on preventing soil erosion, floods, and sediment; improving wildlife habitat; and increasing crop yields.

Today we realize that appearance must be considered neither frill nor accident. It is as much an indicator of environmental quality as any other consideration. SCS today systematically includes visual quality in all its work. Our professional engineering staff now includes three landscape architects. Policy statements and guidelines on conserving visual quality are being produced.

The main SCS guideline is that a plan for landscape management in conservation activities must be more than a planting guide. Functional use of plantings (including some developed at SCS plant materials centers) can aid visual quality of conservation work by:

—Controlling soil erosion;

—Screening distracting views, such as ongoing construction or finished works that can't themselves be made visually attractive;

—Helping guide people's glances toward lake areas or other sites;

—Visually connecting existing woodland edges or reducing the negative impact of straight-edge woodland and waterways;

—Providing shade, food, cover, travel lanes, and homes for wildlife; and

—Helping control foot traffic around recreation areas.

Yet attractive plantings alone are not enough. Visual quality must be a factor in deciding:

—Where conservation structures should be placed;

—What size and shape they should be;

—What kinds of materials should be used in building them; and

—Whether the practice would indeed be an "improvement" at all.

Conservation practices then must be installed in a way that will be as visually attractive as possible during and after construction. We will need to help local people and conservation districts evaluate the visual quality of each site and choose alternatives for achieving the best esthetic appeal. We must also help people understand what conservation measures will look like in place. If, after construction, the land user says, "That's not what I expected at all," we have failed to communicate what to him may be one of the most important facts about the practice or the structure.

Kenneth E. Grant

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Earl L. Butz
Secretary of Agriculture

Kenneth E. Grant, Administrator
Soil Conservation Service

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COVER: Small watershed projects, such as this one near Timpanogos Mountain in the Alpine Soil Conservation District in Utah County, Utah, are attracting more and more visitors for recreation each year. (See story on page 12.)

Alaska's Diversity: A Challenge for Its New Plant Materials Center

by **Wayne Burleson**

Administrative specialist, SCS, Anchorage, Alaska

From the rather distant perspective of the lower 48 states, Americans might think of Alaska as a treeless iceland, lacking diversity.

Yet Alaska is a huge and diverse land mass more than 2,400 miles wide, about the same distance as between Savannah, Georgia, and San Diego, California. There are four time zones between Tongass in southeastern Alaska and Point Hope on the Chukchi Sea. Annual precipitation varies between 4 inches and more than 300 inches. Temperature extremes of −75° to +99° occur.

This tremendous diversity of conditions creates great problems in protecting Alaska's environment as the state's resources are developed. Major environmental problems have been created by the Trans-Alaska Pipeline, an accelerated highway construction program, and urban and industrial expansion.

Alaska's state government is responding to the challenge of environmental protection through a variety of actions. Perhaps the most basic is the establishment of a plant materials center to develop the necessary vegetative materials for conservation, agriculture, and industry.

In 1972, the Alaskan Legislature directed the Department of Natural Resources (DNR) to establish a plant materials center in the Matanuska Valley. Operating funds were made available in January of 1973, and 285 acres with several buildings were purchased for the new center 11 miles south of Palmer.

Through the Intergovernmental Personnel Act, James R. Stroh, who had been manager of the Soil Conservation Service plant materials center in Bridger, Montana, was selected to become manager of the new state center. As manager of the Alaska Plant Materials Center, Stroh's primary responsibilities are the establishment of the physical facilities for the center, development of the plant testing and production program, projection of that program for a 10-year period, and the training of the professional staff to carry out that program. In addition, he carries out some of the plant collection, plant evaluation, and development work itself.

The Alaska Plant Materials Center was located in the Matanuska Valley because of the proximity and access to the DNR's Division of Agriculture headquarters in Palmer. The division is in direct charge of the center. There were other advantages to the location.

Matanuska Valley has an established agriculture. The soils and climate were known to be suitable to diverse crop production, and access to commodity, equipment, and

Jim Preston, SCS district conservationist in Homer, Alaska, looks at polar brome growing at the Alaska Plant Materials Center in Palmer.

service facilities was established. The plant materials center, however, serves the entire state.

Because of Alaska's diversity of climate, soils, vegetation zones, and plant materials needs, substations or even additional centers may become necessary as the state develops.

The Matanuska Valley is a primary agricultural area in the state, chiefly by virtue of the strong federal influence in colonization of the area in the 1930's and the attendant publicizing of that effort. There are several other areas of potential agricultural development across the state which have not as yet received such intensive government support.

"At the moment, the only plant materials intentionally excluded from our testing program are mosses, lichens, and algae," Stroh explains. "Every other species of native plant is eligible for inclusion. Selected species not native to Alaska are also being tested and we are especially interested in plants from Canada, Scandanavia, and the Soviet Union. Nor would we exclude collections from above 50° latitude in the southern hemisphere.

"The legislature has directed the center to develop new plant materials for 'agriculture, conservation and industry' and its intent is to provide suitable plant materials for whatever needs may arise for them. The scope of this endeavor, then, is far broader than any of the federally operated plant materials centers.

"In addition, the Alaska center is directed to develop and support the state's emerging seed stock and plant propagation industries by providing foundation seed and planting stock of all released plant varieties grown in Alaska to commercial producers. These will eventually include forest trees, grains, forage plants, vegetables, fruits, and ornamentals in addition to conservation plants."

Drawing on SCS experience through the services of Stroh benefits the Alaska DNR by providing expertise in plant materials center development and operations; the avoidance of major pitfalls in procurement, budgeting, and organization; and by providing training for the new staff.

The Alaska center also is able to readily obtain and evaluate promising plant materials from SCS plant materials centers.

Together, this will insure that new plants are provided for agriculture, conservation, and industry most rapidly. And it will preclude the losses of any plant varieties already released but not available to the public due to lack of facilities.

The Soil Conservation Service is an official cooperator in the plant materials center program. The conservation program of SCS in Alaska will benefit directly from this state work, because the plant materials SCS needs will become available.

Finally, the existence of a local functioning plant materials center provides a focal point for many state and federal plant-oriented agencies to coordinate their individual efforts in conservation by virtue of a single common source of plant materials for all needs. ♦

He Manages His Range

'To Meet Any Emergency'

by Allen R. Temanson

District conservationist, SCS, Killdeer, North Dakota

"History has a way of repeating itself, and we should profit by our past performances. However, we usually become complacent and forget what happened in past years, remembering only the good." That's why Tony Stroh, a rancher and conservationist near Killdeer, North Dakota, believes that resource management is extremely important in western North Dakota. The history referred to is the weather cycle of wet and dry years.

"I try to manage my range to meet any emergency that occurs. This includes years of short rainfall and minimal growth of native grasses," Stroh explains. He farms and ranches 2,400 acres, including 480 acres of leased land, in Dunn County. Purebred Hereford cattle are his major operation.

After Stroh obtained the ranch and decided on a livestock enterprise, he seeded cropland to grass for tame pasture and hay production. To date, he has seeded approximately 750 acres to permanent grass and legumes. He also seeds rotation hay in cropland strips to provide adequate forage for winter feeding. The grazing of tame pastures in early spring has delayed the need for use of native range until June or July. This delay has greatly enhanced the growth and vigor of key species of grasses such as green needlegrass, western wheatgrass, and big bluestem.

The cropland is all in stripcropping patterns, either contour or wind strips. Along with the stripcropping system are pattern-type field tree belts, grass buffer strips, diversions, erosion control structures, and grass and legumes in rotation. Corn is raised and cut for silage to provide necessary roughage for wintering feeder calves.

Stroh has planted livestock shelterbelts at five locations in his native pastures.

"In the cattle business I feel it's essential that I give my livestock all the protection and comfort I can. These shelterbelts may save a portion of my herd from some winter storm," he said. "I also believe that plenty of water is essential for proper grazing, and cattle gains are appreciably better where adequate water is available.

"The cycle of wet and dry years will continue coming and going. We have to anticipate prolonged drought and manage our resources in the expectation that this is the year when it will start. I usually carry over about a year's supply of hay and enough grain to manage for a year or two," he said.

Stroh has been a district cooperator with the Dunn County Soil Conservation District since he started ranching in 1950 and has been under the Great Plains Conservation Program since March 1966. He is vice president and a director of the North Dakota Hereford Association.

Stroh has also provided one strip of cropland to be used by the Dickinson Experiment Station as a trial plot for grain varieties. This has given the area a first-hand knowledge of the adaptability of various varieties to local climatic conditions.

The West River of North Dakota will not again become the Great American Desert if Stroh and operators like him are managing its resources. ♦

Conservation Editions on the Rise in Kansas

by Fred Trump

Information officer,
SCS, Salina, Kansas

Presentation of the Kansas Bankers ... University ... and Conservation awards ... 30th annual ...

Contour Farming

by Joseph B. Becker, Jr.
Technician

Contour farming is farm... sloping cultivated land in a way that plowing, prep... land, planting and culti... with f... such ... major ... appro... contou... farmin... crops ... or sm... slope ... the fi...

Erosion And Sediment Control

by Clarence Martens
District Supervisor

In recen... rs, public int... nental matt... renewed ... problem of ...

Kansas dust storms played role in SCS development

By ARNOLD L. SERVISS
County Executive Director
McPhers... County ASCS Office

...lust storms were in... ...he decision of our ... the soil and water ...am during the "dirty ...

...rogram was funded ...ation of ...500 million ... and mul... Soil a... through ...is volun... not be ...operators ...tions to ...ake the ... In fa... er and reason ... windbre... Each ...tions. W... part of ... develop... Conser... throug... conserv...

SCS Offers To Solve Problems

Do you have proble... ...is easy, ...dom ... of ... is ... d ... s ... e ... s ... ...

Waterways...

by Forrest Anthony
Harper County Conservation District Supervisor

It's a crying shame to build waterways and terraces ... These are only a few of the reasons given to tree belt removal. These may be valid for short-term

CONSERVATION SECTION

Produce More, Protect More: Till Less

by Earl J. Bondy
Conservation Agronomist
USDA Soil Conservation ...

No-Till Farming Produces More

by Earl J. Bondy
Conservation Agronomist
USDA Soil Conservation Service
Salina, Kansas

Produce more, protect ... Produce ... by tilling ... any time. ... pertinent ... fuel and ... ...e ar...

Windbreaks Provide For A Valuable Resource On Kansas Plains

By Jack Walstrom

Today, more than at any ... Dust Bowl days ... land, especially irrigable land, may limit feasibility of multi-row plantings. Under ... farming situations, ...e event of ...

Conservation: A Warm Feeling

Conservation is building ... grassed waterways, terraces, diversions, ponds, growing grass and trees, and leavin... cover for birds and ra...

working ... deve...

Conservation is knowi... water can be reused ... times — if we use it wise ... fuel per acre ... till-plant system ... tillage takes 2.5 ga... a saving of over ... Where soil er... problem, soil lo... reduced 65 to 95 ... minimum tillage. When soil is lost from crop fields, fertilizer nutrients are lost, too. In dollars and cents this can amount to $2 and $3 per ton of soil eroded. So preventing

'Let's Keep Up the Good Work in Conservation'

By ROBERT K. Griffin
State Conservationist,
Salina

The nation that destroys its soil destroys itself."

...servation work still re... ...mains to be done. However, the strong interest that Kansas land... owners and operators ... shown during 1974 in

Soil and water conservation is alive and well in Kansas.

This fact is evident not only as one flies across the state, but also in the support Kansas newspapers give to conservation programs.

During the first 3 months of 1975, Kansas newspapers published 68 special conservation editions, indicating strong public support for conservation work. The editions are published in conjunction with the annual meetings of the state's 105 conservation districts. State law requires these meetings be held during January and February.

A typical outstanding edition is that of the Fort Scott Tribune. It was published in tabloid format, although most of the conservation editions use regular newspaper format. The front page featured a full-page picture and articles in the issue included five by SCS personnel and three by conservation district supervisors.

The editions vary greatly around the state. The Burlington Daily Republican's conservation edition stretched out over 4 days; the Hiawatha Daily World published aerial photos of the farms of the five Banker's Award winners on the front page.

Subject matter and variety are strong points in the conservation editions. Most contain a good mix of feature articles about Banker's Award winners as well as articles by district supervisors, local, area, and state SCS personnel, Agri-

cultural Stabilization and Conservation Service personnel, and Cooperative Extension Service personnel.

The SCS state office each December sends five or six feature articles to SCS field offices for consideration in the conservation editions. A feature article by the state conservationist, for example, appeared in 32 of the conservation editions, and articles by both the conservation agronomist and range conservationist each appeared in nearly 30 editions.

Soil and water conservation is mighty important in a state that has 49 million acres of agricultural land. Fifty-eight percent of this land has conservation plans and about half of the agricultural land has conservation treatment completed. The depth and strength of grassroots support for conservation in Kansas is evident in the interest shown by many of its 240 weekly and 50 daily newspapers.

Most of the medium-sized newspapers publish a conservation edition annually—and the number of such editions is growing each year. ♦

Recipe for Beef

by Robert Bauer
District conservationist, SCS, McClusky, North Dakota

Take adequate water and grass, stir in a good portion of proper management, and feed to high quality cows. That's the recipe Lewellyn Tewksbury of Mercer, North Dakota, has been using to increase the amount of beef he sells.

Tewksbury, a cooperator with the Sheridan County Soil Conservation District and a holder of a Great Plains Conservation Program contract, changed his operation from a diversified unit to just about a straight livestock unit.

He did this after facing two main problems: much of his rangeland was unevenly grazed due to lack of watering facilities and inadequate fencing, and much of his cropland was marginal and eroding.

A cooperator since 1961, Tewksbury faced that year the fact that his rangeland had been burned in a grass fire started by lightning. The wetland areas had been overgrazed and the grass was poor. Tewksbury seeded these wetlands areas, about 45 acres, to reed canarygrass and got an excellent stand.

On marginal cropland where he had gotten low small grain yields, he seeded 270 acres to grass for pasture. He also installed adequate watering facilities on his 1,340 acres of rangeland and cross-fenced it so that no pasture had more than 320 acres.

Tewksbury now uses native rangeland only for summer and early fall grazing. Tame pastures, mostly crested wheatgrass, are used for spring and late fall grazing.

On his remaining cropland, he maintains 50 acres of alfalfa for hay and seeds 50 acres of wheat on summer fallow with sweetclover, and the remaining acres to oats for hay and grain.

"The seeding of marginal cropland to grass has certainly paid off," according to Tewksbury.

"I am now able to keep my livestock off native grass until early summer. Seeding the native wetlands has also aided in giving the warm-season grasses a chance to grow while the cattle are grazing the reed canarygrass.

"Even with the lack of rainfall last summer, my mature cows, 5 years or older, gained 55 pounds. My average weaning weight has increased 92 pounds since I started using good grass management and livestock selection."

Tewksbury reduced water erosion both through seeding marginal cropland to grass and installing two grassed waterways on the remaining cropland to take excess water from the fields.

Overall, Tewksbury's conservation plan included grassed waterways, grass seeding, cross-fencing, livestock water developments, field windbreaks, farmstead and livestock windbreaks, proper grazing use, crop residue use, and pasture and hayland management. ♦

'Second Career'

Of an Ohio Farmer

by Leigh D. Mantell

District conservationist, SCS, Ottawa, Ohio

Born and reared in the country, Richard Bowers had spent his life farming until 1960. That year, he lost the cash-rented land which produced most of his living. Even in the rich agricultural area of northwest Ohio, Bowers couldn't make a living on his 65 acres.

Bowers looked for off-the-farm work. But his trek from factory to factory proved discouraging. He found only closed doors.

Then, the Putnam County farmer began a second career working with the soil—a career that has been so successful it's put him back into farming on an even larger scale than before.

It started with the purchase of a backhoe, one of the first in the area. With a natural aptitude for using machinery and an almost spiritual admiration for the outdoors, Bowers picked up odd jobs repairing broken tile lines, putting in septic tanks, and burying rock piles.

Then, in 1963, the Soil Conservation Service began to work with erosion control structures in Putnam County. Bowers knew the land, had ability with machinery, and was available.

"I was asked if I would be interested in putting in a structure for my cousin, Bob Bowers. It was a new experience for all of us," he explains.

The drop inlet offered considerable potential for controlling erosion along the many miles of open drainage ditches in the county. It was a practical device badly needed to lower surface water from the broad, gently sloped surface ditches into stream channels without leaving costly and damaging erosion.

"At first it was a slow, back-breaking process as it is with any new product," reminisces Bowers.

In the early days, it took 2 to 3 days to put in one of the structures made of concrete blocks.

Time was spent hauling machinery, equipment, and materials such as concrete blocks, pipe, mortar, water, and steel reinforcing rods a quarter of a mile or more to a distant part of the farm. The backhoe, used only for a few hours work altogether, was tied up on the site the entire time, making it difficult to pick up additional money doing other jobs.

"If the job was halfway in and it rained, you had a real mess on your hands," said Bowers.

Trying to come up with something more practical and to provide work during idle winter months, Bowers hit on the idea of a precast concrete structure.

Through trial and error and hard work, he refined his precast structures and progressed from the original oil drum molds to 3/16-inch sheet metal forms which are easier to work with and result in a product much easier to install.

Another obstacle stood in the way before the structure business could really start booming.

"Local farmers weren't interested in putting in structures unless they could get surface drainage," states Bowers.

A lack of qualified contractors in the county encouraged Bowers to purchase some earth-moving equipment for his farm tractor. With this equipment, he could now install the shallow surface ditches badly needed by many Putnam County farmers to drain their tight, heavy clay ground.

With the drainage matter settled, all it took for the structure business to start growing was time to explain it to farmers and develop their confi-

dence that the new product was worth its cost.

"Installing a precast structure now takes 6 to 8 hours, and I can sell them faster than I can make them," says Bowers. "Another advantage is that the weather is no longer the factor it once was."

From his success in the contracting business Bowers is also back into his "first career." He now owns 175 acres of rich, flat farmland near Columbus Grove in southern Putnam County and operates another 80 acres for his father.

A believer in good conservation, he practices what he preaches. In keeping with his conservation plan developed with SCS help, he has installed two precast structures, nearly 4,000 feet of surface drainage, and more than 150,000 feet of tile drainage on his own land. Convinced that good land treatment pays, the progressive farmer follows a conservation crop rotation which includes wheat with red clover for a green manure plowdown on his clay soils.

Setting one of the new precast concrete structures into place takes only a few hours.

"I learned a long time ago that I get better yields on our soils with this type of rotation than I do going with a more intense rotation," he claims.

Bowers' practice of following good land management also carries over to the rest of his acreage. He's worked with a forester from the Ohio Department of Natural Resources in maintaining his 12-acre woodlot.

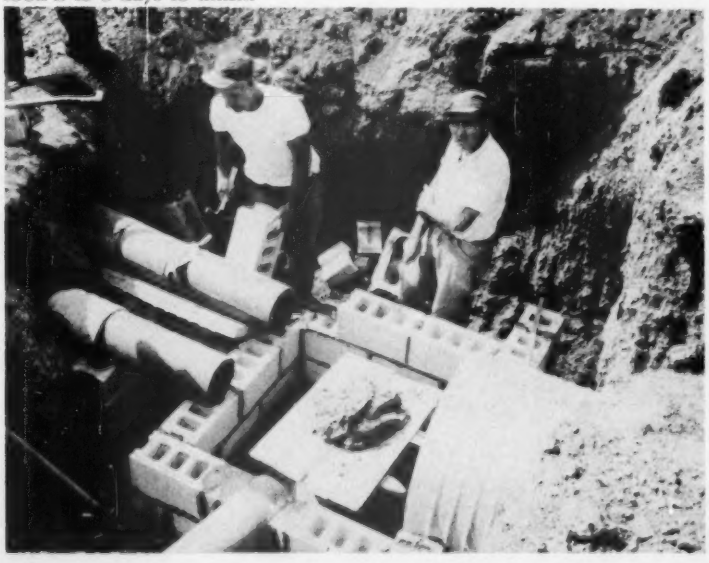
"To make room for the growth of smaller trees and get a return off this land, mature trees were harvested," he explains.

Unlike many farmers in this section of the state who have cleared their woods because they feel it is worth more to them as cropland, Bowers places considerable value on his woods for wildlife habitat, esthetic value, and windbreak benefits.

With the encouragement of his wife, who assists in the time-consuming operations by managing the books, Bowers has planted a number of fruit-bearing trees and shrubs around the farmstead to add beauty to the home area and to attract songbirds and other wildlife.

An avid promoter of conservation, Bowers' sincere interest in the land brought him special recognition in 1973. He was selected Conservation Farmer of the Year by the Putnam Soil and Water Conservation District. ♦

Earlier structures installed by Bowers were built of concrete block and took 2 to 3 days to finish.



Recreation On the Rise In Watershed Projects

by Hans G. Uhlig

Recreation specialist
Northeast Technical Service Center
SCS, Upper Darby, Pennsylvania

Small watershed projects offer opportunities to relieve some of the present and projected congestion at popular outdoor spots as well as provide millions of people the advantages of a nearby recreation area.

There will be room for an estimated 18 million more recreation "customers" a year in 38 states when facilities now under construction are completed in Public Law 566 watershed projects. Earlier projects already in use can expect even heavier traffic.

The Soil Conservation Service administers the Small Watershed Program, which includes a combination of soil and water conservation measures on private and public land as well as dams and other structural measures on upstream tributaries of watershed areas under 250,000 acres.

Although the primary purpose of these small watershed projects is to prevent floods, the pools for sediment retention offer excellent recreation possibilities, particularly if enlarged to impound permanent

water for recreation purposes. Dams can be, and have been, enlarged specifically for public outdoor fun activities, as well as for fish and wildlife development.

A study of 28 of these public recreation developments already in operation underlines the booming nationwide demand for water-related recreation. These projects cover more than 9,000 acres of recreation land and more than 3,200 surface acres of recreation water.

At the time they were planned, the projects were estimated to attract ultimately 896,000 recreation visits a year. The actual number of visits in 1973 exceeded 1.3 million.

These projects received an average density of use amounting to 134 visits per acre of land—compared with an average density of 56 users per acre at all state parks in the United States.

Based on these comparisons, public recreation developments under P.L. 566 are an outstanding success.

More than 200 such watershed recreation developments are scattered throughout the country—and they are bound to relieve the pressures on other public areas.

In Ohio, for instance, Wolf Run State Park—originally estimated to receive 60,500 visits

At left, Lake Malone State Park in Kentucky draws visitors to the beach along the lake, part of the Mud River Watershed Project. At right, one of the most popular recreation activities on small watershed projects—fishing.

annually already receives more than 152,000 recreation visits a year. The 200-acre impoundment in this park near Caldwell was sponsored by the State of Ohio.

Lake Charles, a 645-acre impoundment near the town of Walnut Ridge, Arkansas, was expected to receive 200,000 visits annually; a recent study indicated more than 345,000 visits.

In Indiana, a 461-acre impoundment with 400 acres of adjacent land area dedicated to recreation in the Busseron Creek watershed was used by nearly 150,000 people in 1973—25 percent more than expected.

In South Dakota, the Pattee Creek 93-acre impoundment was expected to attract 12,000 recreation visits; it actually attracted 69,000 visits.

What attracts people to these sites? Fishing is one primary activity. Fishing visits are attracting 89 trips per acre per year, at least three times the average for a natural lake in the country. Swimming is another. The average 1-acre beach is attracting 32,000 visits a year, or 865 swimmers on a Sunday. Picnicking is another attraction. The average development was built with 60 picnic tables. In 1974, 228 picnickers sat at each table.

These impoundments and public recreation developments have contributed much to the quality in the local standard of living. Additional improvements planned to date under P.L. 566 encompass nearly 55,000 surface acres of water and approximately 100,000 cost-shared acres of land which will provide facilities for swimming, picnicking, camping, hiking, and other water-related fun. ♦

Texas 'Tryouts'

by Gary Westmoreland

Range conservationist, SCS, Temple, Texas

As a young man, George T. Halsell saw the mesquites begin to invade his father's ranch in Jack County, Texas.

He was not alarmed then, but by the time he took over active management of the ranch, mesquite was so dense that it was impossible to ride to the high point in a pasture to see the cattle. At roundup time, half a dozen cowboys often needed 2 days to get the cattle out of the brush in one pasture and into the corral.

It was then—30 years ago—that Halsell became a pioneer in fighting undesirable brush.

Then, years before the modern science of range management came into its own, Halsell began trying to control mesquite, first with arsenic and later with a basal application of kerosene and diesel, much safer but still costly and time consuming.

He was one of the first to try aerial spraying of mesquite well over 20 years ago. Although this first attempt was unsuccessful, Halsell persisted in his quest to reduce brush so he could grow more grass.

In 1959, he signed a Great Plains Conservation Program contract with the Soil Conservation Service and worked out a plan to provide for brush management on the entire ranch. The plan, approved by the Upper West Fork Soil and Water Conservation District, also provided for conservation treatment of the land and included management practices such as deferments and proper grazing use.

Halsell now had a blueprint with a schedule to follow—a conservation plan—and cost sharing to help cover the expensive job ahead of him as he embarked on a grassland improvement program.

Discovering that deferments following brush treatment improved the quality and quantity of his grasses, Halsell started a four-pasture deferred-rotation grazing system in 1969 that included 11,546 acres of his 12,748-acre ranch. This system involved grazing about three-fourths of the ranch while one-fourth was rested. A third of the herd was moved to a fresh rested pasture each 4 months. This permitted a pasture to be grazed 12 months, followed by a 4-month rest.

Halsell abandoned his four-pasture deferred-grazing system in 1972 for a more sophisticated system—the high intensity-low frequency grazing system.

When Halsell started this new system, many questions were yet unanswered. He traveled to workshops and field days to learn more about it and was assisted by SCS range

specialists. It took more than just courage to group 650 cows into one herd and begin moving them from one pasture to the next in planned sequence. Halsell has made his system work—with much hard work and study—and the innovations in his grazing system will have a lasting impact on the ranching industry.

Realizing his life-long dream of growing more and better grass, Halsell continues to control undesirable brush as well. He was one of the first to use picloram for aerial spraying of mesquite, has chained more than 3,000 acres of previously treated mesquite in the last 5 years as a means of follow-up control, and works with state universities on controlled burning as a possible means of controlling regrowth of oak brush.

Halsell has been recognized for achieving "excellence in grazing management of rangelands" by the Texas Section, Society for Range Management, through his demonstrated outstanding knowledge and ability to improve rangeland. He is a director of both the Texas and the Southwestern Cattle Raisers Associations and has been a cooperator with the Upper West Fork Soil and Water Conservation District for 30 years. More than 115 local Future Farmers of America and 4-H members gather annually at his ranch for a range management field day, and it was on his ranch that Jack County's Annual Range Management Day and Beef Cattle Field Day began. Both of these events are sponsored by the Upper West Fork Soil and Water Conservation District and attract visitors from Texas and Oklahoma. ♦

George Halsell (center) discusses grazing systems with fellow livestock men in Jack County —Charles McClure and Henry Richards.

Land Use Control: The Black Hawk County Experience

by Louise A. Lex and Louis Lex, Jr.

Visiting instructor of political science and associate professor of urban planning, Iowa State University, Ames, Iowa

How to protect the Nation's prime agricultural land is a current—and often controversial—topic. With some of the most productive soil in the world, Black Hawk County in Iowa has taken steps to direct growth away from its best farmland—using soil survey information and a zoning ordinance.

The environmentalist movement which has swept the country in recent years has emphasized the need to control pollution of the air and water. Legislative bodies have responded by enacting programs which restrict the way both resources are used. Attitudes have undergone a substantial change; no longer are clean air and pure water regarded as abundant and limitless. The irony of this concern for these resources is that there has been a reluctance to support measures which restrict the use of another key resource—land. Attitudes toward land as an expendable commodity are beginning to undergo some modifications, however, as evidenced by bills which have been introduced in Congress and laws that have been passed in a number of states.

The shift from local control of land use to state management is a result of an emerging sensitivity to the forces and effects of urbanization.

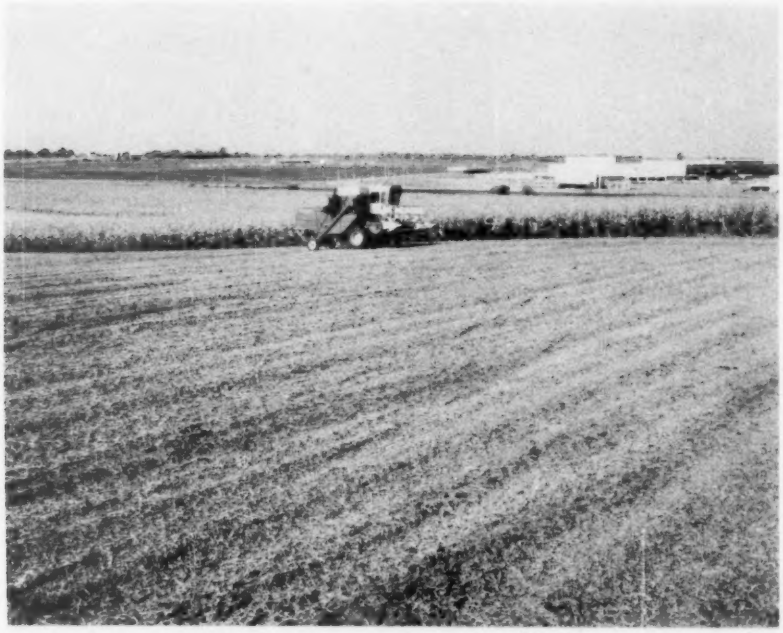
Most of the land on which urbanization has taken place is cropland; much of it is prime agricultural land. A substantial percentage of the better farmland in this country is located in counties within Standard Metropolitan Statistical Areas (central cities of 50,000 or more and the adjacent urbanizing areas). Once this land has been built upon, it cannot be recycled or purified as is the case with solid waste, air, and water. The dominant question, then, is how can growth be directed so that prime agricultural lands can be used for growing crops, and population development channeled onto other lands of less agricultural productivity?

One county in Iowa has devised a method for controlling the spread of urbanization onto prime agricultural lands within the existing state enabling legislation. Black Hawk County, located in north central Iowa, is a prosperous agricultural area with a 1970 population of nearly 133,000. In the southwest corner of the county, a blanket of loess soils reaches a thickness of 4 feet and has proved to be some of the most fertile soil in the world. Although agriculture is a major economic force in the county, there is a strong industrial base as well; the principal plant of the John Deere Corporation is located in Waterloo, a city of 75,500. Directly abutting Waterloo is a second urban area, the city of Cedar Falls, with nearly 30,000 residents. The University of Northern Iowa with a student enrollment of 10,000 is located in Cedar Falls and is another important employer in Black Hawk County.

Pressures to convert surrounding prime agricultural lands to urban uses have been substantial.

According to Robert Sieglaff, the county zoning commission chairman, the county was confronted with the problem of indiscriminate, leapfrog residential development without regard to the suitability of the land for agricultural or building purposes.

"We have areas that can



absorb residential building. There is no sense to building on good farmland," Sieglaff contends, "when there is other land which is just as suitable for residential purposes."

Two factors coalesced to help to protect vital farmland and direct residential growth to suitable, but less valuable, farmland.

The Black Hawk Soil and Water Conservation District had been conducting a 4-year comprehensive soil survey. The survey was completed, for the most part, in July 1973.

At the same time, the Iowa Northland Regional Council of Governments (INRCOG), one of the 16 multicounty planning commissions in Iowa, had agreed to update the county's zoning ordinance under a contract with the county board of supervisors. The zoning ordinance revision began in 1971 and was completed in 1973.

Kenneth Lind, assistant director of INRCOG, was charged with the chief responsibility for revision and he recognized the potential value of the soil survey to the revised ordinance. With the detailed study the conservation district was conducting, a crop suitability rating (C.S.R.) could be assigned to all land in the county. The C.S.R. was a way of rating the capacity of the soil to produce crops. Lind saw that zoning could be based on the C.S.R. and written into the ordinance. With the soil survey data, prime agricultural land could be identified and protected through the mechanism of zoning.

The Iowa Code exempts farms from zoning as long as they are used for agricultural purposes. The code does not define what a farm is, however. The old county zoning ordinance, which was being revised, had defined a farm as 80 acres, and it permitted 3-acre residential lots anywhere within the A-1 (agricultural) zone. Under the revised ordinance, the minimum acre lot for farms with single-family homes was 35 acres. An additional change was permitting 3-acre single-family residential lots on land in which the C.S.R. rating was below 85 percent. The net effect of these provisions was to prohibit residential development on prime agricultural land as defined by the county soil survey and to encourage 3-acre residential development on less productive farmland.

On July 10, 1973, a public hearing was held on the proposed ordinance. At the hearing a number of farmers and a realtor voiced objections to the proposal. Several expressed the view that the new proposal would discourage growth in Black Hawk County and shift it to the adjacent counties.

One farmer voiced concern about a "system of regulation which will take away my individual rights as a farmland owner to choose the disposition of my farm. More important" he continued, "I would not like to have the price of my land stay at a limited level because several persons sitting in judgment say that my land can-

not be used for any other purpose than farmland." A representative from a realty firm in Waterloo opposed the 35-acre minimum as too restrictive.

Of the 11 people who expressed their views, one spoke in support of the proposal. "I think it's necessary that we save our best farmland, absolutely necessary," he said. "We have the new soil survey in Black Hawk County and this pinpoints where the good farmland is. Certainly some farmers farm a farm better than others and they can get more out of poor farms, but we certainly know from soil surveys what the best soil in the county is. We ought to support it."

According to Sieglaff, no group actively supported the proposal, and only one group opposed the revision — the county realtors' association.

"Their bread and butter is the sale of land, and they want to sell land with as few restrictions as possible," Sieglaff said.

The resulting ordinance proved to be a compromise with the realtors' group. The regional planners wanted to enlarge the amount of land that would have been defined as prime agricultural land; the realtors wanted to reduce it. The 85 percent C.S.R. rating finally agreed upon represented about 15 percent of the total farmland in Black Hawk County. INRCOG Executive Director Hugh Copeland said the rating should be reduced to 75 percent to enlarge the definition of prime agricultural land.

Although no farm organization endorsed the proposal, farmers generally agreed that the new zoning was necessary. Two people in particular contributed to this consensus. One was Bart McAninch, the SCS district conservationist in the Black Hawk Soil and Water Conservation District, under whose supervision the soil survey was being conducted. Cooperating with INRCOG planners, McAninch helped to set the stage so there was an understanding by the farmers of the need. An Iowa native, McAninch strongly identifies with the farmers and the locality.

"We don't want someone from Washington or Des Moines telling us what to do if we can do it ourselves," he said.

The second person who greatly influenced the farmers was the chairman of the county zoning commission. Sieglaff is a second-generation farmer in Black Hawk County. He has served on the county zoning commission since 1960 and has been its chairman since 1965. He has been active in 4-H Club work and has served as chairman of the Black Hawk County Farm Bureau. He feels that other farmers not only share his views but are even more vigorous about land protection than he is. He explains his position this way: "What I was doing was expressing their thoughts. There are many who are more adamant than I am. We are the stewards of the land, and we have an obligation to protect it.

"I've seen this area grow and what has occurred. We are trying to preserve our environment so succeeding generations will have something to work with."

On September 11, 1973, the zoning ordinance was adopted unanimously by the county board of supervisors. The anticipated movement of population to other adjacent counties began. In June 1974, however, the Buchanan County Board of Supervisors followed the lead of Black Hawk County and adopted a similar ordinance. At the present time INRCOG is working on a zoning ordinance for another adjacent county, Bremer County, and the ordinance will be patterned after the Black Hawk County ordinance. The city of Waterloo, according to the regional planners, also is studying the possibility of protecting the prime agricultural land within the city limits. ♦

Re-Creating Early Texas Landscapes

by Jacob C. Garrison*
and Lynn Pace

Plant materials specialist, SCS, Phoenix, Arizona, and biologist, Texas Parks and Wildlife Department

Looking out across rangeland or other land in Texas, it's difficult to appreciate how greatly the landscape has changed. Even if there are no farmhouses or highways in view, the very plants in front of the viewer are, in all probability, quite different from those that existed a century ago.

Before the settlers came, clearing the land and forests and grazing their livestock, nature had over the centuries produced a unique mixture or community of native plants and animals particularly adapted to the region where they occur. Plant and animal communities might differ within a very short distance, and would be quite different in various regions of Texas, but within their province such communities were time-tested and nature-proven.

However, subsequent livestock grazing pressures, land clearing, soil erosion, timbering, fire control, urbanization and a host of other man-influenced factors drastically changed this relatively stable condition. Natural communities fluctuated and often were greatly modified. Those plants desirable for livestock forage, timber or other uses gradually were removed through constant and prolonged utilization. In time, utilized species were replaced by more adaptable but often less desirable species.

The people of Texas have long recognized the value of maintaining natural areas throughout the state, and an extensive system of state parks reflects their concern. Now the Texas Parks and Wildlife Department (TP&W) and the Soil Conservation Service have joined in a cooperative effort to maintain and in some instances re-create on these parklands, the natural communities of early Texas.

Through a 1973 agreement between the two agencies, a full-time biologist from the TP&W Resource Management Section is stationed at SCS's James E. "Bud" Smith Plant Materials Center at Knox City in north central Texas. The biologist trains in horticultural techniques, assists in the center's operational procedures, and provides direct assistance to area parks in the application of plant materials.

Established in 1964, the "Bud" Smith Plant Materials Center is maintained and operated for assembling, testing, selecting, and providing for the commer-

*Author was formerly the manager, James E. "Bud" Smith Plant Materials Center, SCS, Knox City, Texas.

cial production of plants for conservation purposes. Working through local soil and water conservation districts, SCS collects, evaluates, and distributes for field testing plant materials throughout Texas and western Oklahoma from the "Bud" Smith Center.

Over 1,400 accessions, or plant collections, are being evaluated on the center's 70 acres of irrigated cropland. Approximately 290 different species, including 120 grasses, 100 forbs and legumes, and 68 woody plants, are being grown for evaluation or production. In 1973, 8,000 pounds of seed, 8,538 plants, and 30,760 rhizomes were grown for field evaluation by district cooperators.

Following completion of the 1973 crop harvest, 752 pounds of seed, representing a variety of native plant species, were allocated by the center to TP&W for use in various state parks. During the same period, 7,000 rhizomes and 865 native plants were also made available. Native grass, hay, and seed cleanings were used as mulching materials on critical areas within the parks. Small amounts of native seeds and plants suitable for landscaping, beautification, and special interest areas are provided to TP&W whenever the center's supply allows.

In 1974, the second year of the program, more than 1,000 pounds of seed, 222 plants, 2,888 rhizomes, and about 350 bags of mulch and bales of hay were distributed to state parks from the plant materials center. These plants included such native species as little bluestem, sideoats grama, blue grama, switchgrass, indiangrass, and Maximilian sunflower.

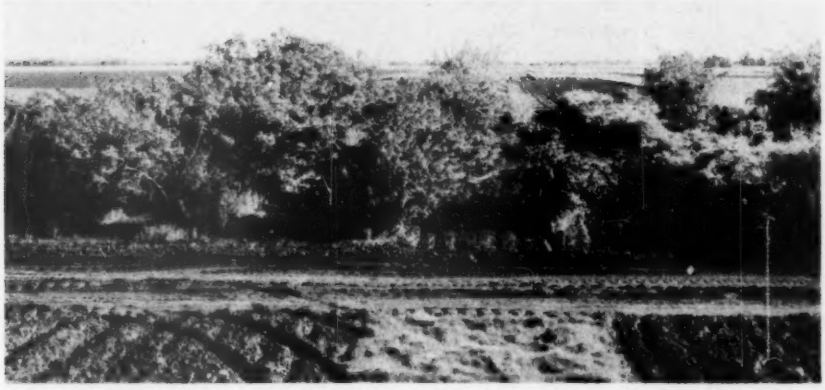
In a related program, the center and the park department are also working to reestablish communities of threatened and endangered plant species. Many of these are threatened by extinction chiefly because of man's activities, and the state park system offers an excellent haven for such species.

Parklands create an excellent opportunity to re-create or synthesize the natural climax conditions that once prevailed over the landscape. Using relict sites and historical accounts and incorporating current technical information on plant production and species distribution, the resource manager can reestablish many of the native plant communities.

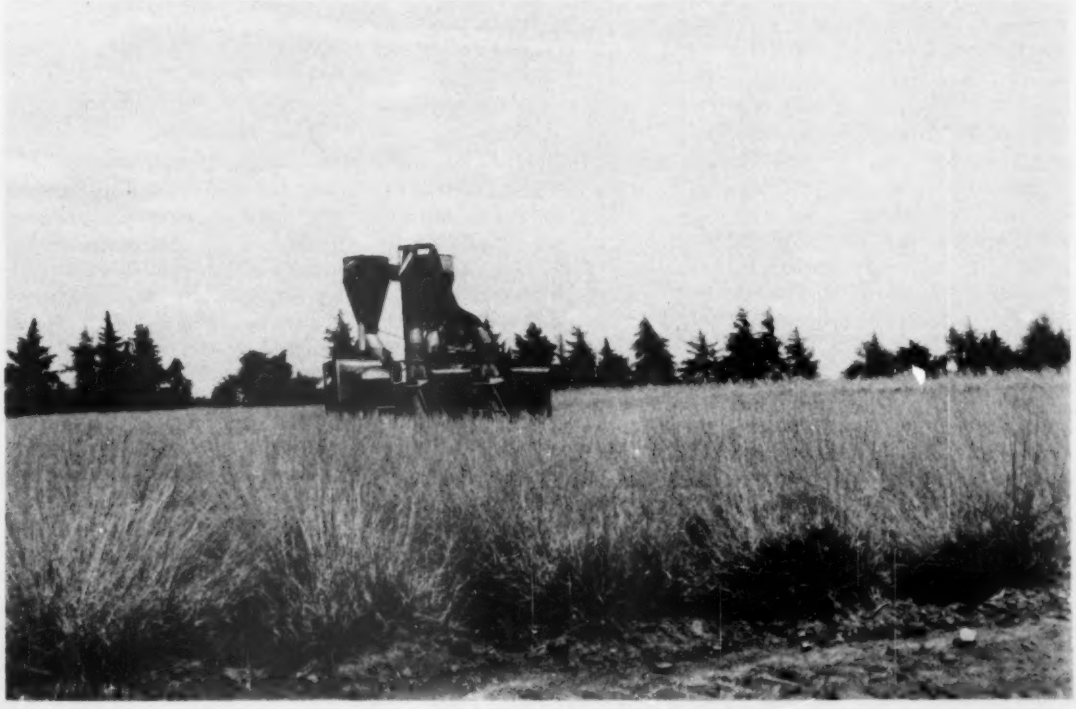
At this time, a program such as this is unique to Texas, but it is an example of the benefits of interagency cooperation. Through the efforts of both the Soil Conservation Service and the Texas Parks and Wildlife Department, visitors to Texas state parks may soon be given a view of the land as it was, in the days of early Texas. ♦

After 3 years of evaluation, the better plants in this assembly of native grasses at the center may be increased and the seed used in range seeding mixtures.

An assembly of native woody plants at the center includes small-flower peachbush, wildplum, little-leaf lead-tree, plum, skunkbush, and four-wing saltbush. All have potential for plantings in Texas parks.



The air-transport grass seed stripper harvests seed from sideoats grama at the center. Cleaned seed will be used later in range seedings by the Texas Parks & Wildlife Department and other cooperating agencies.



Recon...

Saltgrass meadows renovated into pasture? USDA's Agricultural Research Service reports research underway that may replace saltgrass meadows in the West with valuable native forage species. These meadows receive ample moisture from natural seepage in many parts of the West where water supplies are short, but are most apt to support saltgrass—which is of little value for livestock production and difficult to control. Research indicates that an application of 4 pounds per acre of glyphosate, a chemical herbicide, should effectively rid meadows of saltgrass. A study of soils in these meadows indicates that most are capable of supporting such valuable native forage species as alkali sacaton. Additional studies are underway for other potentially higher yielding species, including tall wheatgrass, Russian wildrye, and smooth brome. All show tolerance to harsh growing conditions and are easier to establish than alkali sacaton.

'Around the world.' If all the trees planted in North Dakota in the last 35 years were in a single row, they would reach around the world nearly 3½ times, reports SCS's state forester in North Dakota, Elmer R. Umland. Plantings during those years have added nearly 175 million trees and shrubs to more than 240,000 acres, and the tree planting program continues to expand almost every year, Umland said. Leaders in the work have been North Dakota soil conservation districts. Most of the plantings have been cost shared through the programs of the Agricultural Stabilization and Conservation Service or the Great Plains Conservation Program administered by SCS. Used in field and farmstead windbreaks, wildlife plantings, and protective belts for public areas, the plantings have helped control wind erosion, keep drifting snow off roads and farmyards, attract wildlife, and reduce fuel and feed needs by protecting homes and livestock.

Less water. Plants are naturally wasteful of the water they extract from the soil—a fact that attracts special attention in the Great Plains. At the Oklahoma State Experiment Station, researchers are experimenting with practices and varieties to help farmers fight drought. In one experiment, they put an asphaltic coating on soil between rows, but found that over the season too many little cracks appeared and evaporation was not stopped as much as expected. Other experiments there so far indicate that plants grown in rows 30 inches or less apart use less water than those in wider rows, and plants in north-south rows use less water than in east-west rows.

Soil surveys

Arkansas

Sebastian County. By John B. Cox, Billy A. Garner, and Frank M. Vodrazka. 1975. Soil Conservation Service and Forest Service in cooperation with Arkansas Agricultural Experiment Station. 66 pp., illus.; maps.

Iowa

Howard County. By Russell L. Buckner and John D. Highland. 1974. Soil Conservation Service in cooperation with Iowa Agriculture and Home Economics Experiment Station, Cooperative Extension Service, Iowa State University, and the Department of Soil Conservation, State of Iowa. 131 pp., illus.; maps.

Webster County. By Maynard P. Koppen. 1975. Soil Conservation Service in cooperation with Iowa Agriculture and Home Economics Experiment Station, Cooperative Extension Service, Iowa State University, and the Department of Soil Conservation, State of Iowa. 121 pp., illus.; maps.

Kansas

Rice County. By Marcellus L. Horsch. 1974. Soil Conservation Service in cooperation with Kansas Agricultural Experiment Station. 63 pp., illus.; maps.

Meetings

Nebraska

Buffalo County. By Louie L. Buller, Robert S. Pollock, Rafael A. Boccheciamp, Charles L. Hammond, Hal Hill, and John A. Elder. 1974. Soil Conservation Service in cooperation with University of Nebraska, Conservation and Survey Division. 86 pp., illus.; maps.

Richardson County. By Howard E. Sautter and Arthur D. Kuhl. 1974. Soil Conservation Service in cooperation with University of Nebraska, Conservation and Survey Division. 72 pp., illus.; maps.

Oregon

Trout Creek-Shaniko Area. By George L. Green. 1975. Soil Conservation Service and Forest Service in cooperation with Oregon Agricultural Experiment Station. 83 pp., illus.; maps.

South Carolina

Laurens and Union Counties. By Wallace J. Camp, J. C. Meetze, W. H. Fleming, and L. E. Andrew. 1975. Soil Conservation Service and Forest Service in cooperation with South Carolina Agricultural Experiment Station and the South Carolina Land Resources Conservation Commission. 65 pp., illus.; maps.

June

1–4	*Twenty-second National Watershed Congress, Portland, Oreg.*
8–12	*General Federation of Women's Clubs, Washington, D.C.*
8–13	*American Water Works Association, Minneapolis, Minn.*
15–19	*Air Pollution Control Association, Boston, Mass.*
16–20	*American Geophysical Union, Washington, D.C.*
18–20	*Twelfth National Agricultural Plastics Conference, Vineland, N.J.*
22–25	*Sixty-eighth Annual Meeting of American Society of Agricultural Engineers, Davis, Calif.*
22–25	*National Association of Counties, Honolulu, Hawaii*
23–25	*American Plywood Association, Vancouver, Canada*
24–28	*Association of Consulting Foresters, Greenville, Me.*
26–27	*Southern Forest Institute, Inc., Asheville, N.C.*
29–July 3	*American Seed Trade Association Convention, Houston, Tex.*
30–July 3	*National Environmental Health Association, Minneapolis, Minn.*

July

3–8	*National Education Association, Los Angeles, Calif.*
13–17	*Seventy-fifth Annual Meeting of American Society of Landscape Architects, San Antonio, Tex.*
19–23	*American Association of Nurserymen, Inc., Chicago, Ill.*
20–24	*National Federation of Business and Professional Women's Clubs, Inc., of the USA, Las Vegas, Nev.*

August

3–6	*National Farm and Power Equipment Dealers Association, Honolulu, Hawaii*
4–8	*American Society of Civil Engineers, Annual Hydraulic Specialty Conference, Seattle, Wash.*
10–13	*American Agricultural Economics Association, Columbus, Ohio*
10–13	*Soil Conservation Society of America, San Antonio, Tex.*
11–13	*American Society of Civil Engineers Watershed Management Symposium, Logan, Utah*
13–15	*American Society of Civil Engineers Irrigation and Drainage Specialty Conference, Logan, Utah*
13–15	*Twenty-Sixth Annual Highway Geology Symposium, Coeur d'Alene, Idaho*
17–22	*American Institute of Biological Science, Corvallis, Oreg.*
17–22	*Ecological Society of America, Corvallis, Oreg.*
24–29	*American Chemical Society, Chicago, Ill.*
24–29	*Joint Annual Meeting of American Society of Agronomy, Soil Science Society of America, and Crop Science Society of America, Knoxville, Tenn.*

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